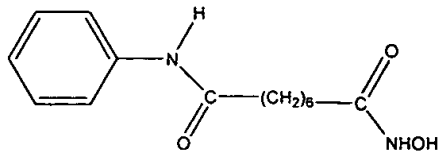
What is claimed is:

1. A method of treating leukemia in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat leukemia in said subject.

2. The method of claim 1, wherein the leukemia is an acute leukemia.

3. The method of claim 2, wherein the leukemia is Acute Myeloid Leukemia (AML).

4. The method of claim 3, wherein the AML is undifferentiated AML, myeloblastic leukemia with minimal maturation, promyelocytic leukemia, myelomonocytic leukemia, myelomonocytic leukemia with eosinophilia, monocytic leukemia, erythroid leukemia, or megakaryoblastic leukemia.

5. The method of claim 2, wherein the leukemia is Acute Lymphocytic Leukemia (ALL).

6. The method of claim 5, wherein the ALL is a subtype L1, L2 or L3 (Burkitt's type leukemia) as classified by the French-American-British (FAB) classification.

7. The method of claim 1, wherein the leukemia is a chronic leukemia.

8. The method of claim 7, wherein the leukemia is Chronic Lymphocytic Leukemia (CLL).

9. The method of claim 7, wherein the leukemia is Chronic Myeloid Leukemia (CML).

10. The method of claim 7, wherein the leukemia is Hairy Cell Leukemia.

11. The method of claim 1, wherein the pharmaceutical composition is administered orally.

12. The method of claim 11, wherein said composition is contained within a gelatin capsule.

13. The method of claim 12, wherein said carrier or diluent is microcrystalline cellulose.

14. The method of claim 13, further comprising sodium croscarmellose as a disintegrating agent.

15. The method of claim 14, further comprising magnesium stearate as a lubricant.

16. The method of claim 11, wherein said composition is administered once-daily, twice-daily or three times-daily.

17. The method of claim 16, wherein said composition is administered once daily at a dose of about 200-600 mg.

18. The method of claim 16, wherein said composition is administered twice daily at a dose of about 200-400 mg.

19. The method of claim 16, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

20. The method of claim 19, wherein said composition is administered three to five days per week.

21. The method of claim 19, wherein said composition is administered three days a week.

22. The method of claim 21, wherein said composition is administered at a dose of about 200 mg.

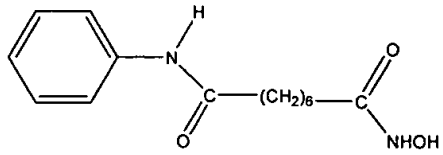
23. The method of claim 21, wherein said composition is administered at a dose of about 300 mg.

24. The method of claim 21, wherein said composition is administered at a dose of about 400 mg.

25. The method of claim 16, wherein said composition is administered three times daily at a dose of about 100-250 mg.

26. The method of claim 25, wherein said composition is administered three times daily at a dose of 150 mg.

27. A method of treating Acute Myeloid Leukemia (AML) in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat AML in said subject.

28. The method of claim 27, wherein the AML is undifferentiated AML, myeloblastic leukemia with minimal maturation, promyelocytic leukemia, myelomonocytic leukemia, myelomonocytic leukemia with eosinophilia, monocytic leukemia, erythroid leukemia, or megakaryoblastic leukemia.

29. The method of claim 27, wherein the pharmaceutical composition is administered orally.

30. The method of claim 29, wherein said composition is administered once-daily, twice-daily or three times-daily.

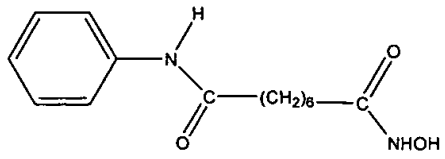
31. The method of claim 30, wherein said composition is administered once daily at a dose of about 200-600 mg.

32. The method of claim 30, wherein said composition is administered twice daily at a dose of about 200-400 mg.

33. The method of claim 30, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

34. The method of claim 30, wherein said composition is administered three times daily at a dose of about 100-250 mg.

35. A method of treating Acute Lymphocytic Leukemia (ALL) in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat ALL in said subject.

36. The method of claim 35, wherein the ALL is a subtype L1, L2 or L3 (Burkitt's type leukemia) as classified by the French-American-British (FAB) classification.

37. The method of claim 35, wherein the pharmaceutical composition is administered orally.

38. The method of claim 37, wherein said composition is administered once-daily, twice-daily or three times-daily.

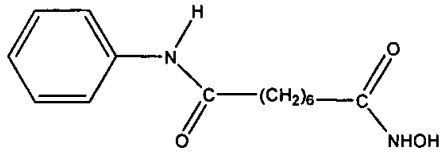
39. The method of claim 38, wherein said composition is administered once daily at a dose of about 200-600 mg.

40. The method of claim 38, wherein said composition is administered twice daily at a dose of about 200-400 mg.

41. The method of claim 38, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

42. The method of claim 38, wherein said composition is administered three times daily at a dose of about 100-250 mg.

43. A method of treating Chronic Lymphocytic Leukemia (CLL) in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat CLL in said subject.

44. The method of claim 43, wherein the pharmaceutical composition is administered orally.

45. The method of claim 44, wherein said composition is administered once-daily, twice-daily or three times-daily.

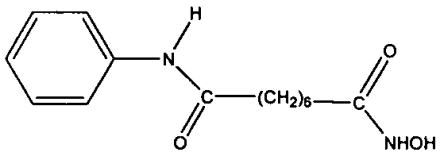
46. The method of claim 45, wherein said composition is administered once daily at a dose of about 200-600 mg.

47. The method of claim 45, wherein said composition is administered twice daily at a dose of about 200-400 mg.

48. The method of claim 45, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

49. The method of claim 45, wherein said composition is administered three times daily at a dose of about 100-250 mg.

50. A method of treating Chronic Myeloid Leukemia (CML) in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat CML in said subject.

51. The method of claim 50, wherein the pharmaceutical composition is administered orally.

52. The method of claim 51, wherein said composition is administered once-daily, twice-daily or three times-daily.

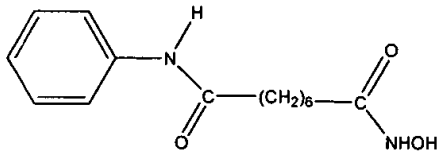
53. The method of claim 52, wherein said composition is administered once daily at a dose of about 200-600 mg.

54. The method of claim 52, wherein said composition is administered twice daily at a dose of about 200-400 mg.

55. The method of claim 52, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

56. The method of claim 52, wherein said composition is administered three times daily at a dose of about 100-250 mg.

57. A method of treating Hairy Cell Leukemia in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat Hairy Cell Leukemia in said subject.

58. The method of claim 57, wherein the pharmaceutical composition is administered orally.

59. The method of claim 58, wherein said composition is administered once-daily, twice-daily or three times-daily.

60. The method of claim 59, wherein said composition is administered once daily at a dose of about 200-600 mg.

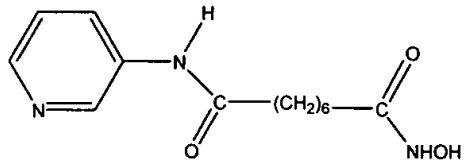
61. The method of claim 59, wherein said composition is administered twice daily at a dose of about 200-400 mg.

62. The method of claim 59, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

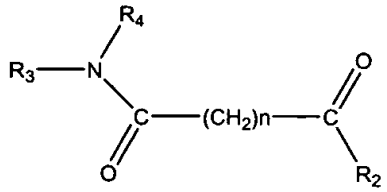
63. The method of claim 59, wherein said composition is administered three times daily at a dose of about 100-250 mg.

64. A method of treating leukemia in a subject, said method comprising the step of administering to the subject an effective amount of a pharmaceutical composition comprising a total daily dose of about 800 mg of a hydroxamic acid derivative histone deacetylase (HDAC) inhibitor or a pharmaceutically acceptable salt or hydrate thereof, and a pharmaceutically acceptable carrier or diluent, wherein the amount of HDAC inhibitor is effective to treat leukemia in said subject.

65. The method of claim 64, wherein the HDAC inhibitor is pyroxamide, represented by the structure:



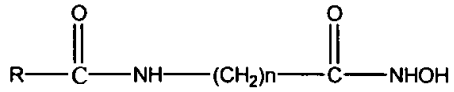
66. The method of claim 64, wherein the HDAC inhibitor is represented by the structure:



wherein R_3 and R_4 are independently a substituted or unsubstituted, branched or unbranched alkyl, alkenyl, cycloalkyl, aryl, alkyloxy, aryloxy, arylalkyloxy, or pyridine group, cycloalkyl, aryl, aryloxy, arylalkyloxy, or pyridine group, or R_3

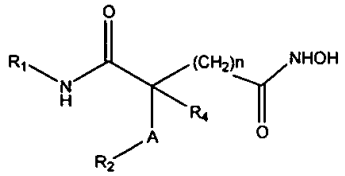
and R_4 bond together to form a piperidine group; R_2 is a hydroxylamino group; and n is an integer from 5 to 8.

67. The method of claim 64, wherein the HDAC inhibitor is represented by the structure:



wherein R is a substituted or unsubstituted phenyl, piperidine, thiazole, 2-pyridine, 3- pyridine or 4-pyridine and n is an integer from 4 to 8.

68. The method of claim 64, wherein the HDAC inhibitor is represented by the structure:



wherein A is an amide moiety, R_1 and R_2 are each selected from substituted or unsubstituted aryl, arylalkyl, naphthyl, pyridineamino, 9-purine-6-amino, thiazoleamino, aryloxy, arylalkyloxy, pyridyl, quinolinyl or isoquinolinyl; R_4 is hydrogen, a halogen, a phenyl or a cycloalkyl moiety and n is an integer from 3 to 10.

69. The method of claim 64, wherein the HDAC inhibitor is selected from the group consisting of m-carboxycinnamic acid bishydroxamide (CBHA), Trichostatin A (TSA), Trichostatin C, Salicylhydroxamic Acid, Azelaic Bishydroxamic Acid (ABHA), Azelaic-1-Hydroxamate-9-Anilide (AAHA), 6-(3-Chlorophenylureido) carpoic Hydroxamic Acid (3Cl-UCHA), Oxamflatin, A-161906, Scriptaid, PXD-101, LAQ-824, CHAP, MW2796, and MW2996.

70. The method of claim 64, wherein the leukemia is an acute leukemia.

71. The method of claim 70, wherein the leukemia is Acute Myeloid Leukemia (AML).

72. The method of claim 71, wherein the AML is undifferentiated AML, myeloblastic leukemia with minimal maturation, promyelocytic leukemia, myelomonocytic leukemia, myelomonocytic leukemia with eosinophilia, monocytic leukemia, erythroid leukemia, or megakaryoblastic leukemia.

73. The method of claim 70, wherein the leukemia is Acute Lymphocytic Leukemia (ALL).

74. The method of claim 73, wherein the ALL is a subtype L1, L2 or L3 (Burkitt's type leukemia) as classified by the French-American-British (FAB) classification.

75. The method of claim 64, wherein the leukemia is a chronic leukemia.

76. The method of claim 75, wherein the leukemia is Chronic Lymphocytic Leukemia (CLL).

77. The method of claim 75, wherein the leukemia is Chronic Myeloid Leukemia (CML).

78. The method of claim 75, wherein the leukemia is Hairy Cell Leukemia.

79. The method of claim 64, wherein the pharmaceutical composition is administered orally.

80. The method of claim 79, wherein said composition is contained within a gelatin capsule.

81. The method of claim 80, wherein said carrier or diluent is microcrystalline cellulose.

82. The method of claim 81, further comprising sodium croscarmellose as a disintegrating agent.

83. The method of claim 82, further comprising magnesium stearate as a lubricant.

84. The method of claim 79, wherein said composition is administered once-daily, twice-daily or three times-daily.

85. The method of claim 84, wherein said composition is administered once daily at a dose of about 200-600 mg.

86. The method of claim 84, wherein said composition is administered twice daily at a dose of about 200-400 mg.

87. The method of claim 84, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

88. The method of claim 87, wherein said composition is administered three to five days per week.

89. The method of claim 87, wherein said composition is administered three days a week.

90. The method of claim 89, wherein said composition is administered at a dose of about 200 mg.

91. The method of claim 89, wherein said composition is administered at a dose of about 300 mg.

92. The method of claim 89, wherein said composition is administered at a dose of about 400 mg.

93. The method of claim 84, wherein said composition is administered three times daily at a dose of about 100-250 mg.

94. The method of claim 93, wherein said composition is administered three times daily at a dose of 150 mg.